

Blog Interface Producing mechanism in e-Learning Platform

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Abstract— Presently the latest internet rage is the blog, the blog's interface is highly readable which makes it very attractive to users. By synthesizing the synergies of e-Learning systems with blogs, so that e-Learning content can be presented in a blog style, such that the attractiveness of e-Learning would be enhanced to prospective e-learners, is the primary focus of this study. Combining the above stated principles and purposes, this paper aims to draw on synergistic interactions between a critical literature review and trials of various interface designs, to discuss whether it is desirable that the blog interface be incorporated into e-Learning platform.

Keywords—Blog's interface, e-Learning

I. INTRODUCTION

The chief advantage of e-Learning is that the learning can occur without restriction as to the time or place, at any moment. This characteristic has made for a powerful momentum among educational institutions and business organizations with respect to their distribution and development of knowledge, both of which processes are more and more reliant on the e-Learning modes of leaning delivery over the more traditional classroom style. The trend towards e-Learning, has also meant a wider variety and flexibility of applications on the internet, and thus, e-Learning environments necessarily must harness these new flexibilities to serve as a successful interface for their human users.

The theories behind e-Learning broadly consider the reading of information online, as a learning act. Hence it is appropriate to consider the design of the e-Learning environments as an important topic for study, and indeed this question is what motivates this study.

Currently, there is a plethora of software available in the global marketplace to support interactive instructional multimedia tools, but because of the vast variety of software available there is also a vast variety of the applications developed by the software, and so far this has meant that many applications lack interoperability, thereby denying users access to the fullest possible range of content or sharing. This is why there are many practical obstacles to the efforts to provide compatible standards and software integration through Learning Management Systems (LMS).

If interaction is the field in which learning and discussion may occur, then interfaces are the most direct means of delimiting the borders of and equalizing the playing field for inclusive access to learning: interface design, whether good or poor, directly effects whether e-learners will be able to adapt and accept e-Learning, and indirectly affects the level of learner motivation and satisfaction. Therefore, no matter how much time instructional designers invest in analyzing content ontologies or designing their educational e-lesson plans, as long as the interface designs work to subvert or subvent rather than to facilitate easy and enjoyable access, then it remains an intractable challenge to stimulate e-learner interest.

Presently the latest internet rage is the blog, and the blog's interface is highly readable which makes it very attractive to users. By synthesizing the synergies of e-Learning systems with blogs, so that e-Learning content can be presented in a blog style, such that the attractiveness of e-Learning would be enhanced to prospective e-learners, is the primary focus of this study.

So, combining the above stated principles and purposes, this paper aims to draw on synergistic interactions between a blog interface producing mechanism and trials of various interface designs, to discuss whether it is desirable that the blog interface be incorporated into e-Learning systems.

II. LITERATURE REVIEW

This study uses the techniques of applied systems engineering and analysis, to investigate and determine the essential elements of successful learning systems in the digital environment in terms of usability and the constituent features of their interfaces, then to analyze the design and function components of user interfaces, to ascertain which blog interface features would be readily adaptable to e-Learning.

Moreover we hope to apply interface design principles, to better understand which features and design elements are essential to better usability in interface designs, to better improve the educational efficacy of e-Learning systems.

A. e-Learning

E-Learning was first coined by the American scholar Jay Cross in 1999. The term combines e, for electronics, with learning. The American Society of Training and Education

(ASTD) defines e-Learning as the delivery of learning content or learning experiences through electronic technologies including computer training, CD-ROMs, VCDs, DVDs, and the internet, etcetera. A more precise definition is[1]: "e-Learning refers to learners using a digital medium to support their learning processes, such digital media include the world wide web, organizational intranets, computers, satellite broadcasts, cassette tapes, videotapes, interactive television and CDs, etcetera. The methods of use include online learning, computerized training, virtual classrooms, and digital cooperative learning." Therefore, e-Learning is an inclusive concept encompassing all of the above mentioned different modalities of electronic learning, when typically delivered or conducted through the internet or when mediated by or with electronic learning activities.

Since 1960, people started employing computers in the field of education and training, and after the advent of the public internet in 1995, the public generally thought that the internet made perfect sense as a public commons for educational training, and thus was born the intense efforts to promote web based learning, by using the internet as the forum for learning, by relying on the two primary methods of synchronous and asynchronous distributed learning and online classes.

1) Synchronous e-Learning:

The most common method of online learning, means that the courses are delivered in real-time, through broadcasts of the lectures by videoconferencing methods, which the instructor providing learning content as the sender, and students as the receivers, and though separated by distance, the e-Learning environment permits some degree of interactivity between and among the teachers and students, so the equipment and logistical arrangements are a bit complicated, leading to rather high costs for this medium of e-Learning delivery.

2) Asynchronous e-Learning:

Permits long term storage of educational content online, and learners are free to learn at their own convenience, without limits as to time or place, with learning available whenever they desire to obtain new knowledge or review past learning, at much less cost and under far fewer constraints or limits, such that this mode of e-Learning has rapidly become the leading format.

B. Blog interface

Blogs, originate from Jorn Barger's concept of the weblog in 1997. The blog arranges online information according to chronological order, and permits individuals to broadcast their individual points of view in a virtual diary format. Scholars propose that the seven cardinal unique features of the blog interface include: Archiving, anthologizing, stability, community, citations, subscription, cataloging

1) Time and date stamping of content contributions:

Blog content is arranged chronologically, so that the blog appears as a living e-timeline, with new content growing and branching forth on top of the roots of prior content and

contributions, while providing visual cues for readers to find other information of interest.

2) Content anthologies and annotations:

Content is organized by date/time features as well as content, with blog content located into specified locations, providing a rigorous foundation for accessible means of knowledge management, because users can readily find what they are looking for and be directed to new content which may be of interest.

3) Stable links:

It provides fixed links, so that each content contribution can be hyperlinked, so that blogs have hyper-interactivity, permitting maximal openness and sharing of blog contents.

4) Comments and commentary responses:

Blog content provides for community comments and commentary, so that every reader can interact and share with each other.

5) Hyperlinked quotations or content:

This feature enhances the interactivity and credibility of blogs.

6) RSS subscriptions:

Employ XML language standards to permit subscribers to be alerted to any new contributions to the blogs they subscribe to by this means, allowing instance updates, and creating a virtual sense of responsive community in real-time.

7) Other features:

Full-text natural language searches, calendars, etcetera.

Since blogs enjoy the above features and functions, the blog should hold great potential for educational uses. For teachers, in terms of their individual professional development, the blog permits an accessible record of their progress and growth as educators, as well as research materials, resources, methods, etcetera, and through the blog's anthologizing capabilities, permits knowledge management processes to be deployed, so one can ascertain the metamorphosis of their teaching strategies and contents or research materials, and be able to dwell upon their past ideas and thought processes, permitting critical evaluation of their thinking and experiential wisdom over time, so that they can engage in continual learning and professional enhancement: additionally, they can use the blog comment and commentary features, and citation functions, to permit the development of a virtual community with other online experts or users, through sharing and interactivity, so that knowledge can be exchanged and invigorated.

As far as students are concerned, the blog is a profoundly empowering learning tool for self-directed study and cooperative and peer-mediated learning. Blog can improve and maintain learners' learning desire [3]. Students can engage in cooperative composition efforts, much like project engineers for major corporations engage in telecommuting collaboration around the globe and engage in reflective analysis of their studies and learning. The sum of such concerted consideration can yield a rich treasury, from which one can develop a personal digital learning portfolio which truly explains who they are and how much they have learned and what they have overcome while learning, which can provide a very meaningful

resource and record for the students themselves and for their teachers and co-learners and other stakeholders in their learning endeavors.

The challenges of blog management and discipline, especially for a class-wide or college-wide blog, and highly motivated participation in the blog, can yield immeasurably valuable senses of belonging, togetherness and mutual responsibility and sensitivity, which can serve as the necessary sparks to ignite the students' souls with a thirst for further learning and personal growth. Additionally, the blog permits students to engage their teachers, peers, and other like minded persons or stakeholders, to interact and exchange, to form real vibrant e-Learning communities. Also, the blog can serve as a natural means of affording students' greater freedom to engage in meaningful self-evaluation of their learning and interactivity with their peers, and objective evidence to support their subjective feelings.

C. Usability Evaluation methods

Nielsen uses the three technical methods of testing, inspection and inquiry to evaluate comparative usability.

If one considers the perspectives of the evaluation methods used in ergonomics engineering, there are two types of evaluations: expert-focused and user-focused. Of these, the expert focused method focuses on determining the opinions of experts (expert quantification), emphasizing objective criteria of satisfactory evaluations and the suitability of interface user interactions as the criteria for design success, for example, contents, standards, cognitive processes and analytical processes, etcetera, to constitute the content of an evaluation.

In user-focused evaluations, the techniques of (post-test) interviewing, observations, questionnaires, discussions [2], cooperation and experimental testing, and other primarily qualitative research methods yield the users responses, to provide for evaluative research of the users [4].

III. RESEARCH PURPOSE

The inclusion of information technology in education is already an established trend, with multimedia instructional tools incorporating text, images, animations, video and audio, providing a full complement of content appealing to the broadest range of learning styles and intelligences.

We also know from experience and research that differently experienced users apply very different cognitive models to their use of e-Learning interfaces; on the other hand, learning is about a process of growth, so it is only natural that different users will have had different prior experiences with interfaces, resulting in different preferences for interfaces, hence, this study proposes to examine the following, to develop the core kernel of questions for our research::

- Do different user profiles employ different cognitive processes in their interactions with e-Learning interfaces? What are the significant differences, if any? To what degree do these differences influence their interactions?

- What are the pertinent interface design principles to account for or suit the experience factor among different users?
- Is the blog interface a suitable one for the e-Learning environment?

The principal purpose of this study is to evaluate the suitability of the blog interface as an e-Learning interface, and after evaluative analysis, to develop recommendations for the most suitable interface design, for use in future planning and design of e-Learning systems as a reference standard. The specific purposes therefore include the following aspects:

- Understand the average user as compared to the experienced user of e-Learning systems' in their user experiences and its variations.
- Through applied analysis of original system designs and new designs applying the interface design principles, develop the interface design guidelines for e-Learning frameworks.
- Discuss blog interfaces, to establish a useful model for their incorporation into e-Learning systems;
- And test actual blog interfaces in e-Learning learning management systems (LMS), and develop principles for future course syllabi interface design.

IV. RESEARCH METHODS

This study completed a blog interface for Moodle and hopes to elucidate e-Learning functional interfaces and their relation to user interface usability and learnability issues, and by applying a structured questionnaire approach to analyze the most appropriate evaluation guidelines, for incorporation into future e-Learning platforms' blog interface planning and designs, in a three stage approach.

A. The first stage

Through extensive literature review efforts, to determine the leading design characteristics of the most representative of blogospheres, and employ expert evaluation to determine whether the interface has a high degree of usability and learnability. After engaging in thorough review and discussions, we select the core features of learner interfaces to develop an actual experimental e-Learning blog interface.

After designing and implementing the e-Learning blog interface platform, we also developed targeted e-Learning applications incorporating the blog interface, and conduct experimental research involving freshman information technology students as the target subjects.

B. Stage Two

We select research team members to participate in determining the principal elements of interface design, and develop evaluation rubrics for questionnaires, such that the questionnaire process can accomplish the dual purposes of structured and unstructured formats, then to apply cluster analysis to determine the degree of similarity between the principles proposed for interface design evaluation so as to facilitate their grouping, then applying regression analysis to

compare and elucidate novice and expert users interactions with the different interface designs.

Additionally, as to the participants in actual experimental conditions, engage in post-test interviews of novices and experienced users, to determine any other usability issues, for development of the conclusions to be proposed during Stage Three.

C. Stage Three

According to the existing content and structure, applying lessons from the literature review and the test participants' evaluations and interview results, develop new e-Learning systems using multimedia authoring tools and graphics software. Finally, we will ask participants to evaluate the newly designed e-Learning platforms incorporating the interface design principles, to compare the original versions with the new and hopefully improved designs. This will allow us to better understand the visual cognition aspects of the usability components of successful e-Learning systems design, and whether the new designs actually provide better functionality, learnability or usability than the original designs, to determine the guiding principles for e-Learning interface design. Flowchart of experimental methods employed and the blog interface of e-Learning platform, as illustrated below:

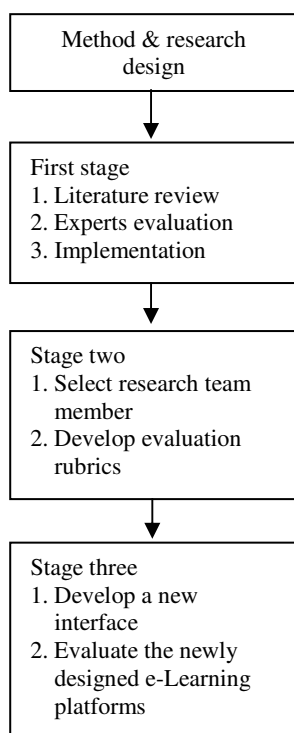


Figure 1. flowchart of the experimental methods employed

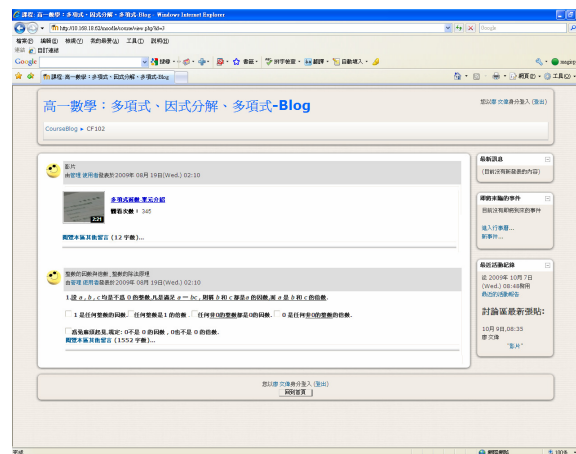


Figure 2. blog interface of e-Learning platform

V. RESULTS/CONCLUSIONS

A. Anecdotal statistical evaluations

According to our research study results, male students from the SHIH CHIEN University comprised 42% of the experimental subjects; while female students comprised 58%; participants who had used the e-Learning Blog Interface Tool (eLBIT) in the past three months, included 22.3% of the males and 21.1% of the females participating; while male and females who had used the system constituted 33.8% and 35.8% of the subjects respectively, showing that the gender distribution of participants was far even and accords with their overall general population distribution in Taiwan.

The number of male participants who had used the system in the most recent ninety days comprised 10.2% of the total participants, and 11.1% for females; while as a percentage of their own gender, male and females who had prior experience with the system composed 20.0% and 20.4% respectively of the male and female participants, which reveals that the gender distribution of participants with experience using the system was even.

The study shows that differences in age, year in college, or department of study, did not reveal any statistical significance for whether the participant had prior experience in use of the system; which indicates that this study's participants who had some prior use of the system were evenly distributed in terms of gender, age, class and major, providing for a fairly representative distribution.

As regards the basic user techniques under evaluation by the questionnaires, irrespective of whether the user had prior experience with the system, all participants were asked to go online and use the system during the questionnaire process, and select by checking off those aspects of the system's coursework. According to this study's results, 43.2% of participants had surfed the webpage programming design course, and 41.4% had visited the object oriented programming design course.

As to which interface elements proved beneficial for increasing learnability and efficiency, 63.3% of the students felt that the RSS subscriber feeds interface proved beneficial to improving their learning, while 44.1% thought that the

typology class manager management interface was helpful; illustrating that students believe that self-directed learning empowerment tool interfaces for gaining new information on topics of interest, and interfaces permitting control over topics of interest, are most useful for improving learnability in the system's e-course.

49.7% of students felt a lack of self-regulated motivation to use the system to study, while 34.6% felt they did not have enough time to use the system for study, and 31.4% said they were unfamiliar (or uncomfortable) with this method of learning, additionally 26.3% regarded the hardware as out of date and 24.9% felt that the range of course options was insufficient, while the problem of least significance seemed to be the computing capacity of the system which affected only 14.8% of users; this proves that Taiwan's university students generally feel capable of benefiting from e-Learning systems, but for the large scale implementation of e-Learning to be successful, it is imperative to plan to address the needs for practical motivations for participation and to ensure students have good time management skills and time available for the course needs.

B. Analysis of the system's design principles

1) Regarding the design principles for instructional content:

Students generally felt satisfied with the design principles underlying the instructional content in the system's website, which could mean that the class syllabus content arrangements and planning were suitable for most users.

The study shows that gender, age, class and major do not have any bearing on their attitudes toward the system's instructional design, which means that most of the users of the system shared a common perspective on the instructional design of the system. From the evaluation of the instructional design perspectives, we can say that the current state of the system's instructional content shows that the overall system plans has already achieved a certain level of competence.

2) The Design principles underlying our instructional design:

The students felt most positive about the design principles underlying our instructional design, as users gave their highest satisfaction levels in this regard, amply illustrating the professional standards attained by our system in terms of the course's instructional design.

From the instructional design research we conducted, it appears that the system's course design employs a wide variety of multimedia, for example, pictures (images, graphics), text, audio, animation, videos and other specialized content, etcetera, all of which were very appealing to most users; additionally almost all users felt highly satisfied with the fact that digital learning was not subject to any time constraints, and the special characteristic of being able to learn whenever you please, which is a major advantage over the traditional classroom based modes of instruction.

3) The design principles for incremental learning:

Most students felt very satisfied with the design principles of the system's incremental approach to learning, which proves that the system's course planning for step by step content delivery was very conscientious.

From our study on the graduated presentation of the content we learned that, the system's incremental learning techniques such as user's help guide, links, search features, etcetera, were deployed to the satisfaction of most users; in new e-Learning environments, because the user does not have a teacher sitting next to them to interactively guide them, it is not uncommon for students to feel lost in a maze without a sense of direction as to where to get started, especially when faced with a massive amount of new learning material, which most certainly requires a thoughtful guided explanation, to ensure efficient use by the student engaged in e-Learning.

4) Design principles underlying the instructional media:

Most students were very satisfied with the system's instructional media design principles, revealing that the system's content choices in terms of text and images, aesthetic deployment of colours, and background designs, were both technically proficient and visually appealing.

The study shows that differences in gender, age, class and major, do not have appreciable effects on users' views about the system's instructional media, which could mean that the users were generally uniform in their views about the instructional media deployed in the system.

5) The design principles underlying the interface compatibility:

Students generally were satisfied with the design principles for interface compatibility, but compared with the ratings for the principles involved in the instructional content, instructional design, guided learning, and instructional media, the ratings for interface compatibility were the lowest, which indicate that while the system has attained a certain level of technical prowess in its deployment, there remains ample room for enhancements.

From the interface compatibility analysis we can see that most users regard the system to be both convenient and reliable, both of which are critically important aspects for future large scale deployment success of e-Learning systems; for users to conveniently obtain needed learning content, and use it in a variety of different physical learning environments, in a classroom without walls, remains the goal of e-Learning systems.

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